

NASA TECHNICAL TRANSLATION

NASA TT F-16,000

(NASA-TT-F-16000) ORBITAL GEOLOGY
(Scientific Translation Service) 5 p HC
\$3.25 CSCL 03B

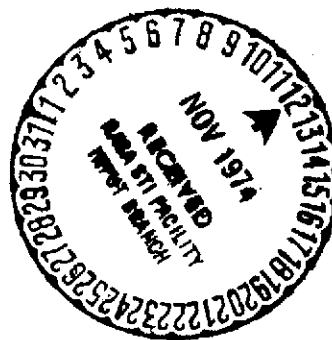
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G3/91 Unclass
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V. Brukhanov

Translation of "Orbital'naya
geologiya", Izvestiya, No. 173
(17711), July 25, 1974, p. 2



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546
OCTOBER 1974

1. Report No. NASA TT F-16,000	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle ORBITAL GEOLOGY		5. Report Date	
		6. Performing Organization Code	
7. Author(s) V. Brukhanov		8. Performing Organization Report No.	
		10. Work Unit No.	
9. Performing Organization Name and Address SCITRAN Box 5456 Santa Barbara, CA 93108		11. Contract or Grant No. NASw-2483	
		13. Type of Report and Period Covered Translation	
12. Sponsoring Agency Name and Address National Aeronautics and Space Administration Washington, D.C. 20546		14. Sponsoring Agency Code	
15. Supplementary Notes Translation of "Orbital'naya geologiya", Izvestiya, No. 173, (17711), July 25, 1974, p. 2			
16. Abstract The use of satellites in space to determine geological features on the Earth is analyzed and discussed. It is stressed that there are great possibilities opening up for geology based on the advances in space technology.			
17. Key Words (Selected by Author(s))		18. Distribution Statement Unclassified - Unlimited	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 5	22. Price

ORBITAL GEOLOGY

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"I think that in the future the name of our alliance," says Vladimir Nikolayevich, "will be 'Space Geology', not 'Aero-Geology'". Space photography for purposes of geology, including the search for useful minerals, is acquiring great importance and is becoming widespread. /2**

The scientific search for deposits begins with the analysis of geological conditions of large territories. In order to distinguish local regions, it is necessary to thoroughly analyze the geological character of the region and to find the combination of those features of its structure which are favorable for industrial development of raw materials.

Earlier, geologists, in their work, went from the particular to the general, creating a geological map on the basis of random observations of Earth. This left subjectivity largely to fate in the creation of an overall map. Space photography has given the opportunity to bring research from the general to the particular,

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** Number in the margin indicates pagination in original foreign text.

increasing the objectivity of the conclusions and prognosis, thanks to the use of photographs, that is, a scaled-down copy of the Earth's geological objects, which — with the usual terrestrial methods — it is difficult or generally impossible to discover.

As is known, rocks, made up of an external cover of soil, in many regions are crumbled into folds and are broken up by uneven breaks (faults). Large faults from great depths — which appear to be unusual canals on which many ores were melted and dissolved, and are raised from out of the entrails of the Earth nearer to the surface — begin to branch out and divide into smaller segments. During ground investigations, they often appear to be only fragments; however, in space photographs, it is not difficult to observe them.

It was considered earlier that the Rudnyy Altay is a coherent system, containing faults in several places. The observation of space photographs indicates that the faults are not a secondary phenomenon, but a primary phenomenon determining the structure of the region. It is established that well-known deposits coincide with the intersections of some faults, and this is the guideline for further research. This kind of picture is observed in some mountainous regions in Middle Asia and the Urals.

Presently, the surface of the Earth has been studied quite well. The path to new large deposits must lead to great depths. It is not paradoxical that the higher we rise above the Earth, the more geological information we receive about the depths. Only with a glance from cosmic heights do small cracks merge together and become seen as lines of faults from the depths. Just as in the brush strokes of a painting, painted with oil, it is impossible to determine anything close up; it is necessary to stand back in order to see the intention of the artist. So with the establishment of natural features, it is necessary to inspect our Earth from cosmic heights.

For example, on the old geological maps of Western Siberia, you cannot find lines of the faults. But in the orbital photographs

received from the "Meteor" satellite, the system of faults clearly stood out, and deposits of oil appeared to be directly related to them.

Many areas considered to be well studied in geological terms, such as, for example, the Caucasus, Urals, and others, appear in quite a new light after space photography. Before the geologists a problem arises — updating present geological maps on the basis of the materials of space photography and refining the prognosis and strategy of geological investigations.

Space research is of importance for the solution of global, theoretical problems of geology. In the last 10 - 15 years, many questions of the "great geo-technology" essentially have been reviewed, many theories and hypotheses have appeared regarding the movement, change, and the expansion of the continents, large masses of the Earth's core. Data received from space may become the "touchstone" for many of these theories. Moreover, not only is space photography important, but also studies of the gravitational field of our planet.

In the program of work of P. Popovich and Yu. Artyukhin on board the station "Salyut-3", the photographing of various territories of the Soviet Union was important, and the results of their filming are useful to the representatives of many branches of the national economy and, most of all, to us, the geologists.

Once, the use of the microscope proved to be a vast aid to geologists. Now, before our very eyes, is born a "megascop" which will allow us to make new qualitative leaps in the development of the ancient science of the Earth. Geology is embarking on a space orbit, and this opens new, tempting horizons before it.

Translated for National Aeronautics and Space Administration under contract No. NASw 2483, by SCITRAN, P. O. Box 5456, Santa Barbara, California, 93108